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Aloe squarrosa Baker – a unique and highly localised Socotran endemic

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Introduction

Aloe squarrosa, first described in 1883, is a small, attractive Socotran endemic with a localised distribution but it also has a very chequered taxonomic history. This is discussed together with details of its distribution, habitat and relationships. A flowering plant in cultivation is described and illustrated.

History

Aloe squarrosa was first named by John Baker at Kew based on a collection made by Professor Isaac Bayley Balfour of the Royal Botanic Garden, Edinburgh, on Socotra in 1880 (Baker, 1883). Later, in his monumental treatise on the *Botany of Socotra*, Balfour (1888) wrote that this was “A very distinct spotted-leaved species. Its near ally is the Cape species *A. consobrina* Salm-Dyck... a plant long in cultivation in this country, but that species has much larger leaves and erect inflorescences as well as other features of difference. We only found two plants of this species at one locality in Socotra, at the base of the limestone cliffs south-west of Galonsir. Probably it is a scarce plant”.

Later Baker (1898) described *Aloe concinna* Baker based on a cultivated specimen apparently collected from Zanzibar in tropical East Africa by Sir John Kirk, which had flowered at Kew in 1895. Strangely, Baker made no reference to *A. squarrosa*. However, another 24 years passed before Wright (1919) published the first colour illustration of *A. concinna* (fig 1). Baker had described the plant as “laxly rosulate”, but by 1901 “it had developed a stem thirteen inches high with scattered foliage”. From this initial plant offsets were raised which subsequently flowered and were used as the material from which the colour painting was prepared. Wright believed that although

the plant in cultivation had an erect stem, he suggested that it would grow prostrate in habitat. Wright also noted that there are “two other Aloes, both nearly related to our plant, yet both readily distinguished from it by their flowers, for one of them, *A. squarrosa*, Baker, a Socotran species, has a shorter perianth, while the other, *A. dorotheae*, Berger, a species of German East Africa [now Tanzania], has a longer perianth than *A. concinna*”.

In the winter of 1898 to 1899, Henry Forbes and William Robert Ogilvie-Grant were



Fig 1. *Aloe squarrosa* from Wright (1919).

sponsored by The Royal Society of London and the Museums Committee of Liverpool City Council to undertake an expedition to the Islands of Socotra and Abdolkuri. The chief aim was the zoological exploration of Socotra, but plant material was also collected and studied. The results of the expedition were published by Forbes (1903) as a *Natural History of Sokotra and Abd-el-Kuri*. The plants collected on the expedition were described in this work by Isaac Bayley Balfour, including two new species of succulent: *Aloe forbesii* (Walker, 2021) and *Euphorbia abdelkuri* (Balfour, 1903). On *A. squarrosa* Forbes wrote “What I believe to be this species, the leaves being distinctly white, was observed on Gebel Bitzobur, a limestone hill in the Garieh Plain (about 800 ft.); and on the slopes of Ferah, or Gebel Dryat as it is also called, the highest peak of the Haghier (at about 4200 ft.)”.

Berger (1908), in the first modern monograph of *Aloe*, described and illustrated both *A. concinna* and *A. squarrosa* and, significantly, noted their close affinity.

The final name to be considered in this saga is *Aloe zanzibarica* (Milne-Redhead, 1947). This was a replacement name for *A. concinna*, invalidly published by Baker because of the previously described *Aloe concinna* (Haworth) Roemer & Schultes f. (published in 1829, but now considered a synonym of *Haworthiopsis viscosa*).

The doyen of *Aloe* students, Gilbert Reynolds, who never visited Socotra, accepted *A. squarrosa* as a species distinct from *A. zanzibarica* (Reynolds, 1966).

In the spring of 1967, the intrepid and renowned succulent explorer John Lavranos visited Socotra and Abdolkuri in the company of Kew's Alan Radcliffe-Smith as part of the Middle East Command Expedition, during which *A. squarrosa* was recollected. In his write up of Socotran aloes, Lavranos (1969) only recognized two species for the island: *A. perryi* and *A. squarrosa*. He resolved the confusion over the latter species and included *A. concinna* and *A. zanzibarica* in synonymy. The full story

of the chequered history of *A. squarrosa* is told in detail by Lavranos (1969, 1970).

Later Carter *et al.* (2011) accepted five aloes for Socotra: *A. forbesii*, *A. haggeherensis*, *A. jawiyon* and *A. perryi* in addition to *A. squarrosa*.

Tom McCoy, in the first monograph of aloes from Arabia including Socotra, similarly accepted the same five endemic species for Socotra (McCoy, 2019).

Distribution and habitat

McCoy (2019) records the species natural distribution as “Endemic to Socotra...on the Jabal Ma'alli Plateau and surrounding cliffs at the western end of the island” and its habitat as growing “on limestone cliffs at an approximate altitude of 300 m (1,000 ft)... It is usually found under the protection of other woody plants such as *Buxus hildebrandtii*.” He also observed that this species apparently no longer occurs at Forbes's locality of Jebel Bitzobur. Miller & Morris (2004) record its conservation status as ‘Vulnerable’ because it is only “known from a few scattered sites”. They further state that plants of *A. squarrosa* are “not harvested [in contrast to *A. perryi*] because they grow in inaccessible places such as rock faces and cliff ledges”.

A particularly significant location on Socotra is Jabal Buzairi on the west of the island (Lodé, 2010b), where three of the five Socotran *Aloe* species grow in close association (sympatrically): *A. jawiyon*, *A. perryi* and *A. squarrosa*. Here *A. squarrosa* grows at 800–850 m, but at the base of the cliff at 760 m an interspecific hybrid: *A. perryi* × *A. squarrosa*, was discovered. The hybrid has a sturdy stem 2.0–2.5 cm in diameter and bluish-green leaves, much less spotty than those of *A. squarrosa*. This hybrid is clearly intermediate between its putative parents and was named *Aloe* × *buzairiensis* Lodé after its locality (Lodé, 2010a, 2011). The hybrid is recorded as being “limited to a few plants and is rather variable”. Lodé (2010b) also suggests that at this same locality a second interspecific hybrid occurs: *A. jawiyon* × *A. perryi*.

Aloe squarrosa in cultivation

My cultivated plant from a Lavranos collection, shown in fig 2, grows easily and prolifically. With time it has produced a short decumbent stem about 20 cm long, such that it now hangs over the edge of the pot. Indeed it is described as a cremnohyte (cliff-dweller) with pendent or ascending stems that can grow up to 40 cm long. It branches moderately but only from the base. Its leaves have a smooth but slightly uneven surface with numerous roughly oval white spots (fig 3), a unique feature amongst the five Socotran aloes. McCoy (2019) appropriately records that “the name for this aloe in the Soqotri language is *tayf ‘abdiher*, which translates as ‘spotted aloe’. The leaves are lanceolate-attenuate, up to 3 cm wide and 12 cm long, strongly recurved and sheathed at the base. The margins are armed with prominent white teeth up

to 5 mm long. The name *squarrosa* appears to originate from “sugarrose, i.e. rough with scales, tips of bracts etc., projecting outwards usually at about 90°” (Stearn, 1973). The inflorescence (fig 4) is short and unbranched up to 15 cm long, strongly arcuate-ascending



Fig 3. Close up of a rosette of *A. squarrosa*.



Fig 2. *Aloe squarrosa* in cultivation from a Lavranos collection without further data. For scale the plant is shown in a 12 cm diameter pot.

(as found in many other cremnohytic aloes). Flowers are small, laxly arranged, up to 22 mm long, coral-pink at the base, fading to pale green at the perianth tips.

Relationships

As mentioned above, Balfour (1888) considered *A. squarrosa* to be a close ally of *A. consobrina* but that species is currently considered to be of uncertain status (Newton, 2020). Wright (1919) suggested a close relationship to the Tanzanian endemic *A. dorotheae* but this has yet to be tested. As already emphasized, *A. squarrosa* is unique amongst Socotran aloes in its spotted leaves. It is therefore somewhat isolated, so its closest relatives are yet to be determined. Reynolds (1966), Carter *et al.* (2011) and McCoy (2019) do not suggest any close relatives. We therefore await the results of future DNA sequencing to determine how this unique species fits into the aloe evolutionary tree.

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Fig 4. Detail of flowers of *A. squarrosa*.

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